HIGH PERFORMANCE EQUALIZER HAVING REDUCED COMPLEXITY

ABSTRACT

An apparatus and method for implementing an equalizer which combines the benefits of a decision feedback equalizer (DFE) with a maximum-a-posterori (MAP) equalizer (or a maximum likelihood sequence estimator, MLSE) to provide an equalization device with significantly lower complexity than a full-state MAP device, but which still provides improved performance over a conventional DFE. The equalizer architecture includes two DFE-like structures, followed by a MAP equalizer. The first DFE forms tentative symbol decisions. The second DFE is used thereafter to truncate the channel response to a desired memory of L_1 symbols, which is less than the total delay spread of L symbols of the channel. The MAP equalizer operates over a channel with memory of L_1 symbols (where $L_1 <= L$), and therefore the overall complexity of the equalizer is significantly reduced.